IN THE CLAIMS

1. (previously presented) Transmitting apparatus which transmits a data signal to a receiving apparatus via at least two different transmission paths, comprising:

an antenna array;

a transmitter array connected to the antenna array;

a plurality of adders connected to the transmitter array; and

a plurality of beamformers connected to the adders, each beam former being configured to operate under control of a weight control unit, which receives angle of arrival signals being estimates of the angles of arrival of signals received from the receiving apparatus, and being configured to receive a respective transmission signal representing a same data signal and to modify the respective transmission signal by splitting the signal into a plurality of separate signals, and multiplying each signal by a complex value being a beamformer weight to form a plurality of digital baseband signals, which are added to the corresponding outputs of the other beamformers in the adders, such that the antenna array produces a plurality of directional transmission beams carrying respective transmission signals which are transmitted via different transmission paths to the receiving apparatus; and

a space-time encoder which applies respectively different space-time coding to the same data signal thereby to produce space-time encoded transmission signals for transmission by the respective transmission beams.

2. (previously presented) Apparatus according to claim 1 wherein the space-time encoder is arranged to transmit an item of data in different transmission beams at different times.

3. (original) Apparatus according to claim 1 wherein the space-time encoder is arranged such that a first transmission signal comprises two sequential symbols and a second transmission signal comprises the two symbols in reverse order.

4. (original) Apparatus according to claim 3 wherein one of the symbols in one of the transmission signals is the complex conjugate of the corresponding symbol in the other transmission signal, and one of the symbols in one of the transmission signals is the inverse of the complex conjugate of the corresponding symbol in the other transmission signal.

5. (previously presented) Receiving apparatus which receives a plurality of transmission signals and outputs a combined signal based on the plurality of transmission signals, comprising:

a receiver configured to receive a plurality of transmission signals representing a same data signal carried in respective directional transmission beams via respective transmission paths, and to separate the plurality of transmission signals; and

a space-time decoder which is configured to decode the transmission signals which have been differently space-time coded by respective space-time coding,

wherein the space-time decoder comprises a channel estimator which estimates channel vectors of the transmission paths and which estimates channel vectors of interference paths from one transmission path to another, and a combiner which combines the received transmission signals with the channel vectors estimated by the channel estimator to yield an output signal.

6. (canceled)

7. **(currently amended)** Transmitting apparatus which transmits a data signal to a receiving apparatus via at least two different transmission paths, comprising:

an antenna array;

a transmitter array connected to the antenna array;

a plurality of adders connected to the transmitter array;

a plurality of beamformers connected to the ~~transmitter array~~adders, each beam former being configured to operate under control of a weight control unit, which receives angle of arrival signals being estimates of the angles of arrival of signals received from the receiving apparatus, and being configured to receive a respective transmission signal representing a same data signal and to modify the respective transmission signal by splitting the signal into a plurality of separate signals, and multiplying each signal by a complex value being a beamformer weight to form a plurality of digital baseband signals, which are added to the corresponding outputs of the other beamformers in the adders, such that the antenna array produces a plurality of directional transmission beams carrying respective transmission signals which are transmitted via different transmission paths to the receiving apparatus; and

a plurality of channel encoders, each channel encoder being configured to encode the same data signal according to a different channel code, thereby to produce the transmission signals for transmission by the respective transmission beams.

8. (previously presented) Apparatus according to claim 7 wherein the channel encoders code the data signals such that cross-correlation between the transmission signals is lower than the cross-correlation between transmission signals when different channel encoding is not employed.

9. (previously presented) Apparatus according to claim 7 wherein the channel encoders apply different error protection codes to the transmission signals.

10. (original) Apparatus according to claim 7 wherein the coding applied by the channel encoders is at least one of convolution coding, turbo coding, block coding and interleaving.

11. **(currently amended)** Receiving apparatus which receives a plurality of transmission signals and outputs a combined signal based on the plurality of transmission signals, comprising:

a receiver configured to receive the plurality of transmission signals representing a same data signal carried in respective directional transmission beams via respective transmission paths, and to separate the plurality of transmission signals;

a plurality of channel decoders each of which decodes one of the transmission signals which has been channel encoded differently from the other transmission signals;

a plurality of channel estimators estimating channel vectors of the transmission paths and channel vectors of interference paths from one transmission path to another; and

a combiner which combines signals decoded by the channel decoders with the channel vectors estimated by the channel estimators to yield the output signal.

12. (previously presented) Apparatus according to claim 11 wherein the channel decoders decode signals which have been coded using different error protection codes.

13. (previously presented) Apparatus according to claim 11 wherein the channel decoders decode signals which have been coded using at least one of different turbo codes, different convolution codes, different block codes and different interleaving.

14. – 32. **(canceled)**

33. (previously presented) Transmitting apparatus for transmitting a data signal to a receiving apparatus via at least two different transmission paths, comprising:

operating means for operating each of a plurality of beamformers under control of a weight control unit, which receives angle of arrival signals being estimates of the angles of arrival of signals received from the receiving apparatus;

configuring means for configuring each beamformer to receive a respective transmission signal representing a same data signal and modifying the respective transmission signal by splitting the signal into a plurality of separate signals, and multiplying each signal by a complex value being a beamformer weight to form a plurality of digital baseband signals;

adding means for adding the plurality of digital baseband signals to the corresponding outputs of the other beamformers using a plurality of adders;

passing means for passing the outputs of the adders to a transmitter array connected to an antenna array;

producing means for producing, using the antenna array, a plurality of directional transmission beams carrying respective transmission signals which are transmitted via different transmission paths to the receiving apparatus;

space-time encoding means for applying respectively different space-time encoding to the same data signal thereby to produce space-time encoded transmission signals for transmission by the respective transmission beams.

34. (previously presented) Receiving apparatus for receiving a plurality of space-time encoded transmission signals and outputting a combined signal based on the plurality of transmission signals, comprising:

receiving means for receiving the plurality of transmission signals representing a same data signal carried in respective directional transmission beams via respective transmission paths;

separating means for separating the plurality of signals;

decoding means for space-time decoding the plurality of transmission signals which have been space-time encoded by respectively different space-time coding, wherein the decoding means comprises estimating means for estimating channel vectors of the transmission paths and estimating channel vectors of interference paths from one transmission path to another, and combining means for combining the received transmission signals with the estimated channel vectors to yield an output signal.

35. **(currently amended)** Transmitting apparatus for transmitting a data signal to a receiving apparatus via at least two different transmission paths, comprising:

operating means for operating each of a plurality of beamformers under control of a weight control unit, which receives angle of arrival signals being estimates of the angles of arrival of signals received from the receiving apparatus;

configuring means for configuring each beamformer to receive a respective transmission signal representing a same data signal and modifying the respective

transmission signal by splitting the signal into a plurality of separate signals, and multiplying each signal by a complex value being a beamformer weight to form a plurality of digital baseband signals;

adding means for adding the plurality of digital baseband signals to the corresponding outputs of the other beamformers using a plurality of adders;

passing means for passing the outputs of the adders to a transmitter array connected to an antenna array;

producing means for producing, using the antenna array, a plurality of directional transmission beams carrying respective transmission signals which are transmitted via different transmission paths to the receiving apparatus;

channel encoding means for encoding the same data signal according to a plurality of different channel codes, thereby to produce ~~a plurality of~~ transmission signals ~~representing a same data signal encoded according to different channel codes; and~~

~~transmitting means for transmitting the plurality of transmission signals to the receiving apparatus via different transmission paths in~~for transmission by the respective ~~directional~~ transmission beams.

36. **(currently amended)** Receiving apparatus for receiving a plurality of transmission signals and outputting a data signal based on the plurality of transmission signals, comprising:

receiving means for receiving the plurality of transmission signals representing a same data signal carried in respective directional transmission beams via respective transmission paths;

separating means for separating the plurality of signals;

decoding means for decoding the transmission signals, each of the transmission signals having been encoded according to a different channel code~~; and~~, wherein the decoding means comprises estimating means for estimating channel vectors of the transmission paths and channel vectors of interference paths from one transmission path to another, and combining means for combining ~~signals decoded by the decoding means~~ the received transmission signals with the estimated channel vectors to yield the data signal.

37. – 39. **(canceled)**

40. (previously presented) A method of transmitting a data signal from a transmitting apparatus to a receiving apparatus via at least two different transmission paths, comprising:

operating each of a plurality of beamformers under control of a weight control unit, which receives angle of arrival signals being estimates of the angles of arrival of signals received from the receiving apparatus;

configuring each beamformer to receive a respective transmission signal representing a same data signal and modifying the respective transmission signal by splitting the signal into a plurality of separate signals, and multiplying each signal by a complex value being a beamformer weight to form a plurality of digital baseband signals;

adding the plurality of digital baseband signals to the corresponding outputs of the other beamformers using a plurality of adders;

passing the outputs of the adders to a transmitter array connected to an antenna array;

producing, using the antenna array, a plurality of directional transmission beams carrying respective transmission signals which are transmitted via different transmission paths to the receiving apparatus;

applying respectively different space-time encoding to the same data signal thereby to produce space-time encoded transmission signals for transmission by the respective transmission beams.

41. (previously presented) A method of receiving a plurality of space-time encoded transmission signals and outputting a combined signal based on the plurality of transmission signals, comprising:

receiving the plurality of transmission signals representing a same data signal carried in respective directional transmission beams via respective transmission paths;

separating the plurality of signals;

space-time decoding the plurality of transmission signals which have been space-time encoded by respectively different space-time coding, wherein space-time decoding comprises estimating channel vectors of the transmission paths and estimating channel vectors of interference paths from one transmission path to another; and

combining the received transmission signals with the estimated channel vectors to yield an output signal.

42. **(currently amended)** A method of transmitting a data signal from a transmitting apparatus to a receiving apparatus via at least two different transmission paths, comprising:

operating each of a plurality of beamformers under control of a weight control unit, which receives angle of arrival signals being estimates of the angles of arrival of signals received from the receiving apparatus;

configuring each beamformer to receive a respective transmission signal representing a same data signal and modifying the respective transmission signal by splitting the signal

into a plurality of separate signals, and multiplying each signal by a complex value being a beamformer weight to form a plurality of digital baseband signals;

adding the plurality of digital baseband signals to the corresponding outputs of the other beamformers using a plurality of adders;

passing the outputs of the adders to a transmitter array connected to an antenna array;

producing, using the antenna array, a plurality of directional transmission beams carrying respective transmission signals which are transmitted via different transmission paths to the receiving apparatus;

encoding the same data signal according to a plurality of different channel codes, thereby to produce ~~a plurality of~~ transmission signals ~~representing a same data signal encoded according to different channel codes; and~~

~~transmitting the plurality of transmission signals to the receiving apparatus via different transmission paths in~~for transmission by the respective ~~directional~~ transmission beams.

43. **(currently amended)** A method of receiving a plurality of transmission signals and outputting a data signal based on the plurality of transmission signals, comprising:

receiving the plurality of transmission signals representing a same data signal carried in respective directional transmission beams via respective transmission paths;

separating the plurality of signals;

decoding the transmission signals, each of the transmission signals having been encoded according to a different channel code, wherein the decoding comprises estimating channel vectors of the transmission paths and channel vectors of interference paths from one transmission path to another; and

combining the ~~thus decoded signals~~received transmission signals and the estimated channel vectors to yield the data signal.

44. – 45. **(canceled)**